

REMARKS

Claims 24-46 and new Claim 47 are active in the case. Reconsideration is respectfully requested.

The present invention relates to a polymer for matte injection molded articles.

Specification Amendments

The paragraph bridging pages 1 and 2 of the text has been amended in order to correct a spelling error herein. Entry of the amendment is respectfully requested.

Claim Amendments

Claims 27, 30, 33, 36 and 38-46 have been amended in order to make minor improvements in language structure and content. None of the amendments are believed to have introduced new matter into the case. Entry of the amendments into the record is respectfully requested.

Claim Objections

The objections to Claims 24 and 38 are believed obviated by the amendment made to each of the claims. Claim 24 has been amended in a way which is believed to have clarified the scope of the polymer material and combinations of (co)polymers which constitute polymer matrix (a). The manner in which polymer matrix (a) has been amended does not introduce new matter into the case. The matrix polymer of new Claim 47 has been defined in the same manner. Entry of the amendments into the record and withdrawal of the objection is respectfully requested.

Invention

The objective of the present invention is to provide a thermoplastically processable polymer mixture for use in the injection molding of parts which have a matt surface and at the same time have a very good ability to resist mechanical and/or chemical/physical effects. These objects are achieved by a polymer mixture where the (1) matrix phase (a) is composed of: (i) a (meth)acrylate (co)polymer with a Vicat softening point (ISO 306-B50) of at least 104° C, or (ii) a mixture of (meth)acrylate (co)polymers with a Vicat softening point (ISO 306-B50) of at least 104° C, or (iii) a (meth)acrylimide (co)polymer; or (iv) mixtures of a (meth)acrylimide (co)polymer (iii) with (i) or (ii). Included in the composition is (ii) an modifier which is based on cross-linked poly(meth)acrylate and which does not bond to the polymer mixture by established covalent bonds. Thirdly, the composition contains from 1 to 15 % by weight of plastics particles composed of crosslinked polymers based on polymethyl methacrylate, on polystyrene and/or on polysilicones, each having a median particle size in the range from 1 to 30 µm. The three components constitute 100 % by weight of the composition.

Prior Art Rejection

Claims 24-37, 39, 42-46 stand rejected based on 35 USC 103(a) as obvious over Kress et al, U. S. Patent 4,895,898 in view of Suetterlin, U. S. Patent 5,621,028 and Lichtenstein et al, U. S. Patent 5,621,028. This ground of rejection is respectfully traversed.

Applicants maintain that the disclosure is of limited relevance to the present invention, because it is directed to a molding composition that is based on thermoplastic polycarbonate as the matrix phase of the prepared composition. Polycarbonate is an engineering plastic. On the other hand, the matrix phase of the present composition is a polymer matrix which is composed of: (i) a (meth)acrylate (co)polymer with a Vicat

softening point (ISO 306-B50) of at least 104° C, or (ii) a mixture of (meth)acrylate (co)polymers with a Vicat softening point (ISO 306-B50) of at least 104° C, or (iii) a (meth)acrylimide (co)polymer, or (iv) mixtures of a (meth)acrylimide (co)polymer (iii) with (i) or (ii). Clearly, the two matrix phases are entirely different materials!

A second material distinction between the two compositions is that the impact modifier component of the present composition is a cross-linked poly(meth)acrylate which, although mixed into the matrix phase material, does not covalently bond to the (meth)acrylate matrix phase. On the other hand, in the patent, the (B) component is a graft copolymer in which a comonomer mixture selected from widely differing unsaturated monomers identified as (B.1) and (B.1.1), is graft copolymerized onto rubber particles (col 5, lines 13-20). Clearly the impact modifier (b) component of the present composition is quite unlike the grafted copolymer material (onto rubber particles) of the reference.

As to the third (C) component of the composition of the patent, the same is a thermoplastic copolymer that is prepared by copolymerizing one or more of styrene, α -methylstyrene, nuclear substituted styrene and methyl methacrylate as primary monomer component with one or more of (meth)acrylonitrile, methyl methacrylate, maleic anhydride and N-substituted maleimide, as secondary monomer components. This component (C) of the composition of the patent differs very significantly from the form and make-up of component (c) of the present claims which is plastic particles of a cross-linked polymer based on polymethyl methacrylate, on polystyrene and/or on polysilicone. The particles have a size within the range of 1 to 10 μm . Obviously, the composition of the present claims is substantially different and unobvious over the composition of the patent. Moreover, it is clear that the distinction of the aspect of the invention claimed in new Claim 47 is even greater over the disclosure of the reference than the other claims, because of the limiting language

employed in the claim which at least clearly excludes the polycarbonate (A) component of the composition of the patent.

The citation of the Suetterlin et al and Lichtenstein et al patents does not overcome a very basic problem of the cited prior art and that is that Kress et al is limited to a disclosure of a polycarbonate based thermoplastic material, while the molding composition of the present invention is a (meth)acrylate based injection molding composition. Thus, a clear and sharp distinction exists between the present injection molding composition and the combined prior art.

Another problem with the attempt to combine the teaching of Suetterlin et al with Kress et al is that the composition disclosed in the primary reference already has a impact modifying component in the form of the component (B) which is formulated by the grafting of monomers onto a rubber. Why, therefore, would the skilled artisan be led to replace the impact modifying component of the composition of Kress et al with another impact modifier disclosed in a different publication? Applicants submit that the only motivation to combine Suetterlin et al with Kress et al is because the impact modifier described in Suetterlin et al is an emulsion polymer that has a core/shell structure seemingly similar to the impact modifier taught in the present specification, thereby providing a hindsight teaching of the use of the impact modifier in Suetterlin et al as a substitute for the impact modifier taught by Kress et al. Such reasoning is improper.

There is also no clear reason why one of skill in the art would be led to substitute the cross-linked polymer particles of the Lichtenstein et al patent for copolymer component (C) of the formulation shown in Kress et al. Even if such a substitution were to be made, the result would be a modified polycarbonate composition which is not what is presently being claimed. Accordingly, withdrawal of the outstanding ground of rejection is respectfully requested.

Claim 38 stands rejected based on 35 USC 103(a) as obvious over Kress et al, U. S. Patent 4,895,898 in view of Suetterlin, U. S. Patent 5,621,028 and Lichtenstein et al, U. S. Patent 5,621,028 and further in view of Suzuki et al, U. S. Patent Publication 2002/0099135. This ground of rejection is respectfully traversed.

Claim 38 is directed to a secondary aspect of the invention upon which patentability does not depend. The subject matter of the claim is directed to component (g) which is an optional component and which is a (meth)acrylate copolymer other than component (d). Accordingly, applicants maintain that the claim is patentable over the cited prior art by virtue of its dependency on Claim 30 and ultimately patentably distinct Claim 24. Withdrawal of the outstanding ground of rejection is respectfully requested.

Claim 40 stands rejected based on 35 USC 103(a) as obvious over Kress et al, U. S. Patent 4,895,898 in view of Suetterlin, U. S. Patent 5,621,028 and Lichtenstein et al, U. S. Patent 5,621,028 and further in view of NieSsner et al, U. S. Patent Publication 2001/0007890. This ground of rejection is respectfully traversed.

Claim 40 also is directed to a secondary aspect of the invention upon which patentability does not depend. The subject matter of the claim is directed to component a mold release agent which is stearyl alcohol. Accordingly, applicants maintain that the claim is patentable over the cited prior art by virtue of its dependency on Claim 38 and ultimately on patentably distinct Claim 24. Withdrawal of the outstanding ground of rejection is respectfully requested.

Claim 41 stands rejected based on 35 USC 103(a) as obvious over Kress et al, U. S. Patent 4,895,898 in view of Suetterlin, U. S. Patent 5,621,028 and Lichtenstein et al, U. S. Patent 5,621,028 and further in view of Parker, U. S. Patent 5,252,667. This ground of rejection is respectfully traversed.

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Claim 41 is directed to a secondary aspect of the invention upon which patentability does not depend. The subject matter of the claim is directed to a polymer mixture which is formulated as a pelletized molding composition. Applicants therefore maintain that the claim is patentable over the cited prior art by virtue of its dependency on Claim 24. Withdrawal of the outstanding ground of rejection is respectfully requested.

It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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